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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/554,709

10/27/2005

Hiraku Kawasaki

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22919 7590 09/10/2010  
GLOBAL IP COUNSELORS, LLP  
1233 20TH STREET, NW, SUITE 700  
WASHINGTON, DC 20036-2680

EXAMINER

CLARK, GREGORY D

ART UNIT

PAPER NUMBER

1786

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/554,709	<b>Applicant(s)</b> KAWASAKI, HIRAKU	
	<b>Examiner</b> GREGORY CLARK	<b>Art Unit</b> 1786	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) 1-26,30,34,43 and 47 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27-29,31-33,35-42,44-46 and 48-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Examiner acknowledges the receipt of the arguments 09/08/2009. Claims 27-29, 31-33, 35-42, 44-46 and 48-54.

Rejections and objections made in previous office action that do not appear below have been overcome by applicant's amendments and therefore the arguments pertaining to these rejections/objections will not be addressed.

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. **Claims 27-29, 31-33, 35-42, 44-46 and 48-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamiya (JP 08-269367A) in view of Mizutani (6,013,724) and Clinnin (US 5,342,871)**

2. **Regarding Claims 27, 31-32, 40 and 44-45**, Kamiya teaches the surface treatment of a plate-like substrate with a coating (paragraph 8 and abstract). Kamiya discloses that the coating resin/formulation is a blend of melamine resin or epoxy resin with an acrylic resin. Additionally, urethane resin, phenol resin, and polyester resin can be used (film forming components) (paragraph 14).

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Kamiya also teaches the surface treatment of a plate-like substrate with a coating to impart a hydrophobic nature (paragraph 8) involving a perfluoroalkyl (hydrophobic organic) group functional silica material (paragraph 10) (per claim 28).

The examiners notes the on page 13 line18 of the specification the applicant notes examples of two component resin which include acrylic melamine. This resin is identical to a resin disclosed by Kamiya (paragraph 14). As a result the acrylic melamine would inherently be corrosion resistant (per claim 40).

Kamiya does not disclose any pre-treatment to the surface which would roughen the surface. As a result, the examiner takes the position take the plate substrate is without protrusions or depressions.

Kamiya fails to mention the solvent medium or the amount of solvent used to apply the plate material coating. The applicant claims 1 to 10% (per claim 27) and 1-5% (per claims 31 and 44) alcohol based solvent.

Mizutani teaches a solvent based hydrophobic paint coating which uses an organic solvent selected from butanol, octanol (four or more carbons per claims 32 and 45), and diacetone alcohol (Column 40, lines 54-58).

The examiner views the use of a solvent as a delivery medium that affects the film forming properties of the coating. A coating formulation with a less than suitable amount of solvent would be expected to result in a coating layer with non-optimized film forming properties.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the appropriate solvent at the appropriate concentration to

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optimize the film forming properties of the coating layer which would have included the instant limitation.

Kamiya does not teach a hydrophilic treatment of the plate-like material.

Clinnin teaches the treatment of aluminum heat exchange fins with a hydrophilic coating that is corrosion resistant (Column 1, lines 7-12) and the coating prevents the blockage of air flow by beads of condensed water which would otherwise build up in the narrow spaces between the fins (abstract).

It would have been obvious to some one of ordinary skill in the art at the time of the invention to have combined hydrophobic plate-material treatment of Kamiya with the hydrophilic and corrosion resistance plate-like treatment of Clinnin to give a means to prevent corrosion damage caused by water collecting on the fin surface and to prevent water droplets from interfering with air flow.

Kamiya fails to mention forming a coating film on the plate substrate whereby the rolling oil being used remains on the plate.

The examiner takes the position that although the prior art is silent on oil removal from the plate the presence or absence of oil is well understood with respect to the adhesion of a subsequently applied coating. A large amount of oil remaining on the plate would be expected to harm the adhesion and a small amount would be expected to have a negligible affect on adhesion of an applied coating. The applicant has not provided any evidence that the combination of no oil remaining on the plate and forming a subsequent film produces an unexpected result. Furthermore, there is no practical amount of oil required to achieve a reproducible result.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to have adjusted the amount of oil remaining on the plate to ensure suitable adhesion of the subsequently applied film and to left oil on the surface if adhesion was not a priority.

3. **Regarding Claims 53-54**, Kamiya, Mizutani and Clinnin teach the inventions of claims 27 and 40 as discussed above.

As mentioned above, the use of a solvent is viewed as a delivery medium that affects the film forming properties of the coating. Additionally, the solvent is not viewed of a part of the final product.

As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to have dried the coating layer to remove the delivery solvent to produce the final coating layer which reads on the instant limitations, absent unexpected results.

4. **Regarding Claim 28 and 41**, Kamiya teaches the surface treatment of a plate-like substrate with a coating to impart a hydrophobic nature (paragraph 8) involving a perfluoroalkyl (hydrophobic organic) group functional silica material (paragraph 10).

5. **Regarding Claims 29 and 42**, Kamiya teaches the surface treatment of a plate-like substrate with a coating to impart a hydrophobic nature (paragraph 8). Kamiya presents data to show the plate-like substrate is rendered repellent to water after the coating treatment. Kamiya does not present the repellency data in the units of dyn/cm. Kamiya reports repellency by contact angle value (alternative means of reporting repellency). The applicant claims a surface tension of 25-35 dyn/cm.

It would have been obvious to one having ordinary skill in the art at the time of the invention to adjust hydrophobic nature of the material selected to obtain the desired level of repellency for the intended application, since discovering an optimum value of a result effective variable involves only routine skill in the art.

6. **Regarding Claims 33 and 46**, Kamiya teaches the surface treatment of a plate-like substrate with a coating to impart a hydrophobic nature (paragraph 8). Kamiya presents data to show the plate-like substrate is rendered repellent to water after the coating treatment. Kamiya does not present the repellency data in the units of dyn/cm. The applicant claims a viscosity that is equal to or greater than 5 Pa-s and less than or

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equal to 20 Pa-s. Kamiya reports repellency by contact angle value (alternative means of reporting repellency).

It would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the hydrophobic nature of the material selected to obtain the desired level of repellency for the intended application, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2<sup>nd</sup> 272, 205 USPQ 215 (CCPA 1980).

7. **Regarding Claims 38 and 51**, Kamiya teaches that the plate-like material used as the substrate for the surface treatments are made from aluminum/aluminum alloy and the plate-like material is of a radiation fin of a heat exchanger (paragraph 1).

8. **Regarding Claims 39 and 52**, Kamiya teaches that the plate-like material used as the substrate for the surface treatments are made from aluminum/aluminum alloy and the plate-like material is of a radiation fin of a heat exchanger (paragraph 1).

9. **Regarding Claim 48**, Kamiya teaches a plate material treated with a fluoroalkyl containing silica (hydrophobic silica) thermoset resin to give the surface repellency to water (paragraph 10). Kamiya does not teach a hydrophilic treatment of the plate-like material.

Clinnin teaches the treatment of aluminum heat exchange fins with a hydrophilic coating that is corrosion resistant (Column 1, lines 7-12) and the coating prevents the



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blockage of air flow by beads of condensed water which would otherwise build up in the narrow spaces between the fins (abstract).

It would have been obvious to some one of ordinary skill in the art at the time of the invention to have combined hydrophobic plate-material treatment of Kamiya with the hydrophilic and corrosion resistance plate-like treatment of Clinnin to give a means to prevent corrosion damage caused by water collecting on the fin surface and to prevent water droplets from interfering with air flow.

10. **Regarding Claim 35**, Clinnin also teaches that the hydrophilic coating formulation contains a volatile organic solvent (column 2, lines 53-56; column 3, line 14).

11. **Regarding Claims 36-37 and 49-50**, Kamiya, Mizutani and Clinnin do not teach the use of a chromic acid treatment or an oil removal treatment. Both Kamiya and Clinnin teach coating a plate-like substrate to achieve corrosion resistant hydrophobic and hydrophilic surfaces (as discussed above).

As Kamiya and Clinnin use like materials (hydrophobic and hydrophilic based coating treatment) in a like manner (without chromic acid or an oil removal treatments) as claimed, it would be expected that the surfaces would have the same characteristics as claimed.

It would be expected that a person of ordinary skill in art at the time of the invention could have used the coatings taught by Kamiya and Clinnin to give

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hydrophobic or hydrophilic surfaces to the plate-like material without chromic acid or an oil removal treatments.

### **Response to Arguments**

The examiner has incorporated a new reference; Clinnin teaches the hydrophilic treatment of aluminum exchange fins. Clinnin replaces Lever and does not teach away from using silicates which was the basis of applicant's previous arguments with respect to Lever. As a result of the change in the rejection basis applicants' arguments will not be addressed in this non-final office action.

### **Conclusion**

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY CLARK whose telephone number is (571)270-7087. The examiner can normally be reached on M-Th 7:00 AM to 5 PM Alternating Fri 7:30 AM to 4 PM and Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art Unit 1786

GREGORY CLARK/GDC/  
Examiner  
Art Unit 1786